MICROFICHED

V08021

WJ-8615/TP TRACKING PRESELECTOR

INSTRUMENT SHOP

WATKINS-JOHNSON

WJ-8615/TP TRACKING PRESELECTOR

1.1 GENERAL DESCRIPTION

The WJ-8615/TP Tracking Preselector is a field installable option for the WJ-8615 Receiver. The primary function of this Preselector is to provide extremely narrow bandpass filtering of the RF spectrum between 20 and 500 MHz. Four separate, tunable filter bands are used in the Preselector, each covering a segment of the overall range, plus a 'BYPASS' band. Selection of the appropriate band and filter tuning, is controlled automatically using a 'Tuning Word' provided by the receiver. Should preselector filtering not be desired, the Preselector can be disabled from the front panel, or through the Remote Bus using the mnemonic "BYP". When "PRE OFF" is utilized, the "BYPASS" band of the Preselector is automatically selected. A 30V dc-dc converter is furnished with the Tracking Preselector to provide the necessary voltage for biasing of the varactor diodes used in the tunable filters.

1.2 INSTALLATION

Installation of the Tracking Preselector option consists of removing one printed circuit board, installing the Preselector board in the same slot and installing a dc-dc converter on an existing printed circuit board. Two cables are disconnected and two are reconnected.

To install the Preselector option, proceed as follows:

1. Remove the top cover of the WJ-8615 by; removing nine (9) flathead screws. (Captive nuts are used to secure these screws.)

   Lift the rear of the cover about a half-inch and slide the cover several inches to the rear. The cover may now be lifted from the unit.

2. Using **Figure 1-1** as a guide, find the location of the RF filter board, Reference Designator A1A14.

3. Disconnect the RF Input coax connector at the top rear of the RF filter board.

4. Disconnect the RF filter output coax cable from the RF preamplifier/converter input, (A1A14).

5. Remove the RF filter board and its output coax cable.

6. Install the Tracking Preselector board in the same card slot which the RF filter was removed. Position the board so that the component side is facing the left side of the cabinet, board connectors down. Press the board connectors firmly into place.

7. Install the output coax cable from the Preselector, into the preamplifier/converter RF input jack, to which the RF filter output coax was connected.

8. Connect the incoming RF coax cable and connector to input jack J1, at the top rear of the Preselector board.

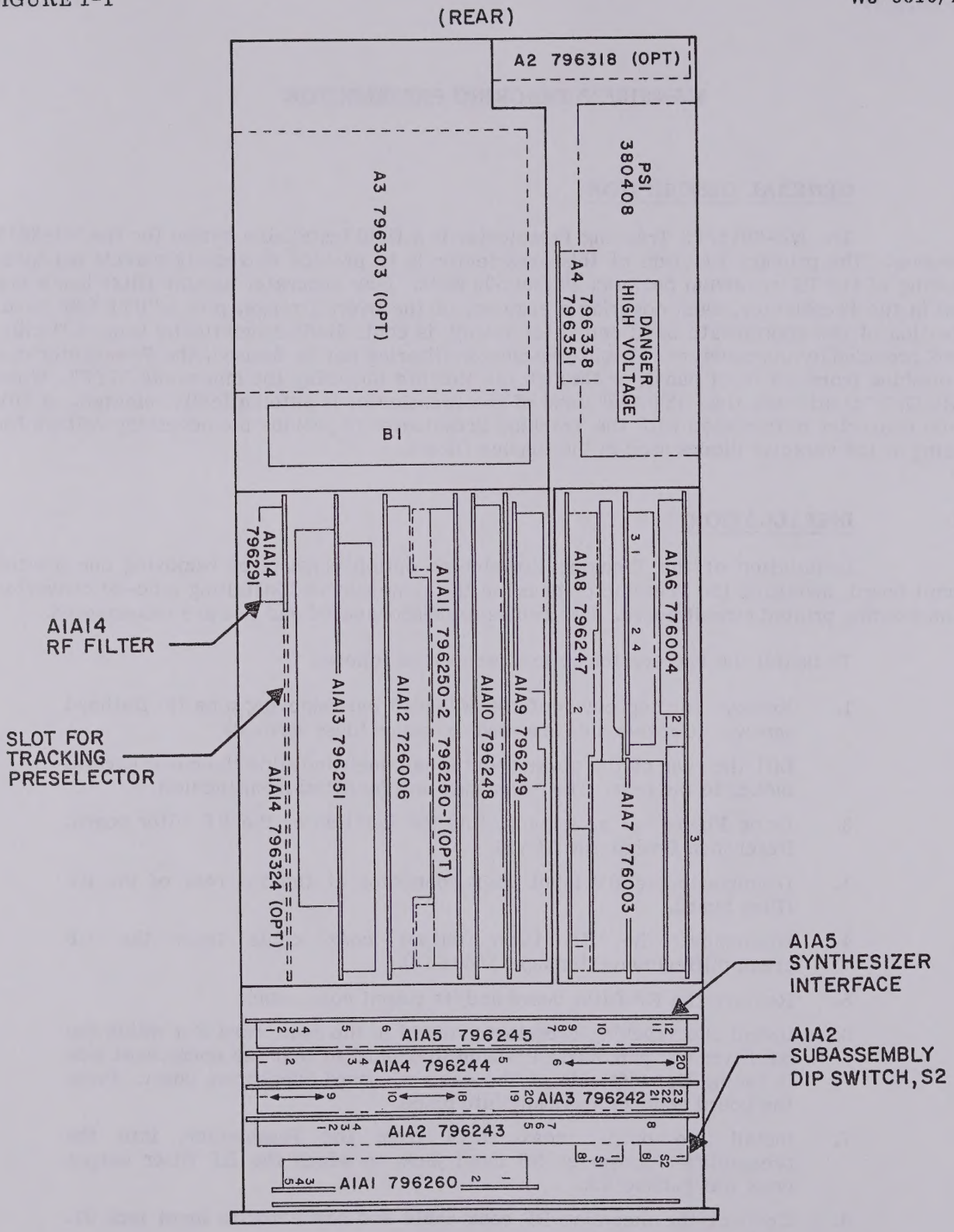


Figure 1-1. Location of Printed Circuit Boards, WJ-8615 Receiver (Top View)

NOTE

THE FOLLOWING STEPS ARE **NOT REQUIRED** WHEN THE TRACKING PRESELECTOR WAS ORDERED AT THE SAME TIME AS THE WJ-8615 RECEIVER.

9. Refer to **Figure 1-1** and determine the board location of the Synthesizer Interface board, Reference Designator A1A5, (fourth plug-in circuit board from the front panel).

10. Remove the A1A5 printed circuit card from the unit.

11. On the component side of the board, notice that in the upper right-hand corner is located an area with designator U15. (Refer to **Figure 1-2**, which is a partial illustration of the board.)

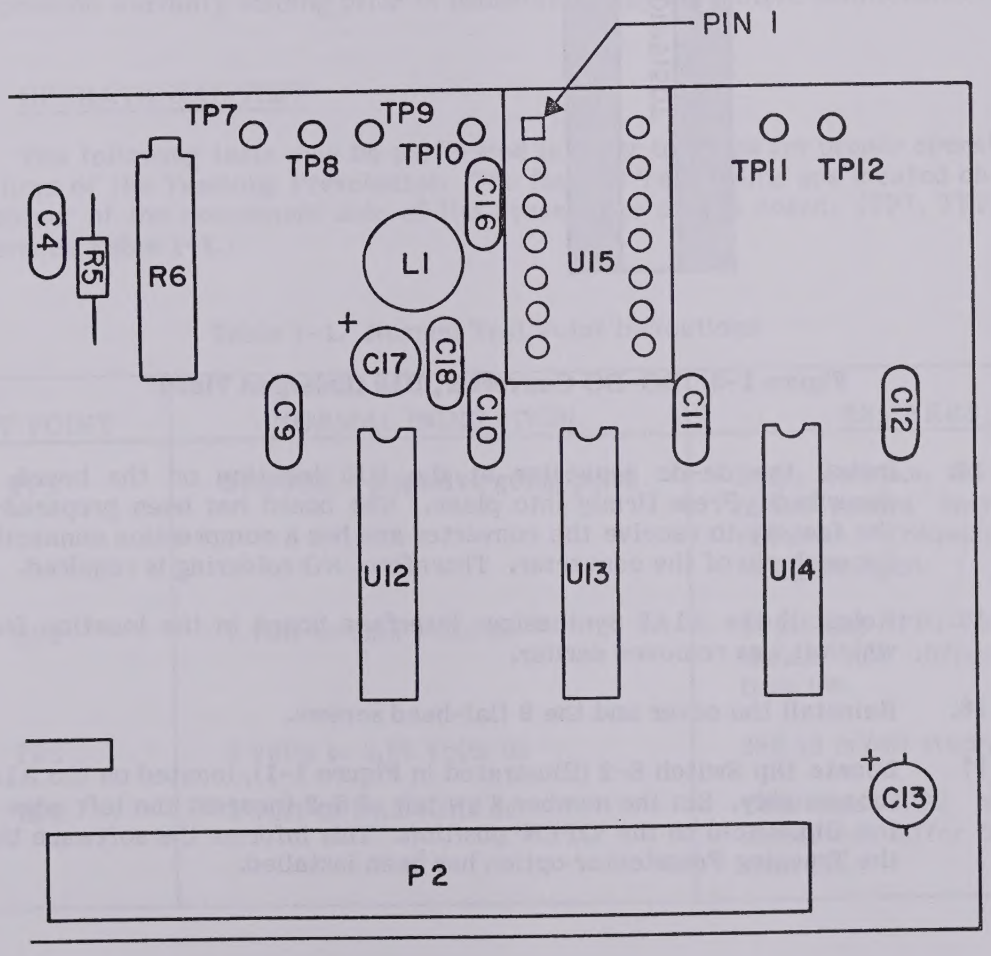


Figure 1-2. Partial Component Side View of the Synthesizer Interface showing U15

12. The dc-dc converter (Part Number DIP515DT), is illustrated in **Figure 1-3.** Note that the number 1 pin of the converter is located with a large white dot.

13. The number 1 pin locator (on the parts mounted side of board), is shown with a square at the U15 location, as shown in **Figure 1-2.**

NOTE

CARE SHOULD BE TAKEN, AS THE CONVERTER CAN BE INSTALLED BACKWARDS!

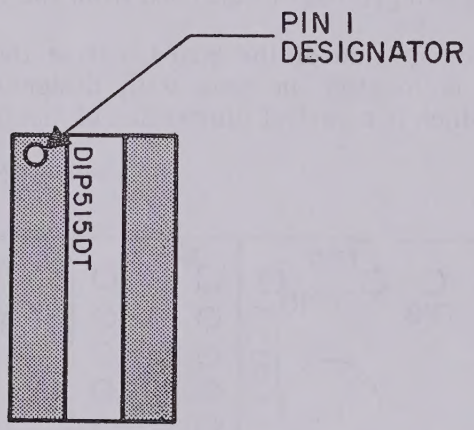


Figure 1-3. DC-DC Converter, U15 (Enlarged View)

14. Install the dc-dc converter at the U15 location on the board, as described. Press firmly into place. The board has been prepared at the factory to receive the converter and has a compression connection for each pin of the converter. Therefore, NO soldering is required.

15. Reinstall the A1A5 Synthesizer Interface board in the location from which it was removed earlier.

16. Reinstall the cover and the 9 flat-head screws.

17. Locate Dip Switch S-2 (illustrated in **Figure 1-1**), located on the A1A2 subassembly. Set the number 8 switch of S-2 (nearest the left edge of the Dipswitch) to the 'OPEN' position. This informs the software that the Tracking Preselector option has been installed.

NOTE

IF A NEW RECEIVER TOP COVER HAS BEEN SUPPLIED WITH THE TRACKING PRESELECTOR, THE OLD COVER SHOULD BE DISCARDED AND THE NEW COVER USED.

18. Install the cover and the nine (9) flat-head screws.

1.2.1 EQUIPMENT MALFUNCTIONS

The Tracking Preselector was thoroughly inspected and factory aligned for performance prior to shipment. If a malfunction is encountered, verify the voltages at the Test Points discussed in **Paragraph 1.3.** If there appears to be a problem, contact your Watkins-Johnson representative or the Watkins-Johnson Company, SP Division, Gaithersburg, Maryland, to prevent possible warranty voiding prior to undertaking any corrective maintenance action.

1.3 OPERATIONAL TEST

The following tests may be performed in order to check for proper operation of the control sections of the Tracking Preselector. The four (4) Test Points are located on the upper righthand corner of the component side of the Preselector circuit board. (TP1, TP2, TP3, and TP4.) (Reference **Table 1-1.**)

Table 1-1. Normal Test Point Indications

TEST POINT	NORMAL INDICATION	REMARKS
TP1	STROBE - Negative going pulse	Pulse duration 50 to 100 nSEC occurs only when receiver frequency is being changed.
TP2	1 Volt to 26.5 Volts dc	TP2 and TP4 voltages should not differ more than 1%.
TP3	0 Volts to 2.55 Volts dc	256 10 mVolt steps.
TP4	1 Volt to 26.5 Volts dc	TP4 and TP2 voltages should not differ by more than 1%.

1.4 OPERATION

Once installed in the receiver, the filters in the Tracking Preselector may be activated or bypassed at will, as required for the intended application of the receiver. This operation is accomplished either from the receiver front panel or via the remote interface of the receiver. Additionally, in either LOCAL or REMOTE mode, the status of this option is available to determine if the filters are active or bypassed.

1.4.1 REMOTE OPERATION

When the receiver is operated in the REMOTE mode, via the IEEE-488 interface, Preselector status and control is accomplished using the BYP, BYP/, and BPY?, remote commands. Descriptions of these commands are as follows:

MNEMONIC	HEX	DEC	DESCRIPTION
BYP?	41	65	This query requests the operational status of the Tracking Preselector. As a response to this command, the receiver will return a "BYP" if the Preselector is in the "BYPASS" mode, or "BYP/ " if the Preselector mode is active.
BYP	3F	63	The "BYP" command selects the "BYPASS" mode of operation, disabling the Preselector filters.
BYP/	40	64	The "BYP/" command selects the Preselector mode. Once active, all control over Preselector tuning and band switching is automatic, requiring no further action by the operator.

1.4.2 LOCAL OPERATION

When the receiver is under local front panel control, the Preselector status can be read or changed by placing the receiver front panel into the definitions mode and selecting the Preselector display, "PrE". This is accomplished by using the following procedure:

a. Starting with the receiver powered "OFF", press in and hold the CONTROL pushbutton, while activating the receiver Power Switch. Continue to hold the CONTROL button in, until the definitions mode is activated, as indicated by a dEF "ON" or dEF "OFF" display in the Frequency Window. Release the CONTROL button when activated.

b. Rotate the front panel tuning knob as required to obtain a dEF "ON" display.

c. Using the UP/DOWN CHANGE buttons, step through the definition functions until the Preselector display is present in the Frequency

Window (PrE "ON" or PrE "OFF"). PrE ON indicates that the Preselector mode is active, while PrE OFF indicates that the BYPASS mode is active.

d. Select the desired Preselector status by rotating the tuning knob until the desired status is obtained.

e. To exit the Definitions mode and restore normal front panel operation, press the CONTROL pushbutton. The Preselector status will remain as selected, unless it is changed using the above procedure or by the definitions mode being turned off (dEF OFF), prior to exiting.

1.5 CIRCUIT DESCRIPTION

1.5.1 FUNCTIONAL DESCRIPTION

The tracking Preselector is characterized by the special ability to automatically tune the bandpass filter center frequency so that it tracks with the WJ-8615 receiver 'front end', through the use of a digital 'Tuning Word'. As an aid to describing the Tuning Preselector circuit, the unit may be functionally divided into two basic sections, the RF Section and the Control Section.

1.5.1.1 RF SECTION

The RF section of the Tracking Preselector consists of four electronically tunable bandpass filters, each dedicated to a specific band of frequencies within the 20-500 MHz frequency spectrum, which may be remotely tuned. Each of these filters has a 3 dB bandwidth that is approximately 11% of its center frequency. As the center frequency of a filter is varied over its specified range, (tracking the receiver tuned frequency changes), the percentage bandwidth remains relatively constant.

The Band "A" filter covers 20-49 MHz; Band "B" 49-118 MHz; Band "C" 118-264 MHz; and Band "D" 264-500 MHz. An additional band called "BYPASS" provides a straight-through signal path with no filtering, which permits operation of the receiver from 20 MHz down to 2 MHz. If desired, the "BYPASS" mode may be selected by the operator at any time, from either the front panel or by remote control, should Preselection in the 20-500 MHz range not be desired.

1.5.1.2 CONTROL SECTION

The other part of the Tracking Preselector is the control circuitry. A "Tuning Word" from the WJ-8615 receiver is used to select the proper Preselector Band. The circuits also provide the proper control voltage for the voltage controlled tuning diodes, which are used in the RF section to resonate the various tuned circuits.

1.5.2 DETAILED CIRCUIT DESCRIPTION

The Tracking Preselector is a WJ-8615 option. Refer to Block Diagram **Figure 1-4**, Parts Location **Figure 1-5**, and Schematic Diagram **Figure 1-6.**

Control for the Tracking Preselector RF circuits is through the use of a "Tuning Word", provided to the Preselector from the WJ-8615 receiver. The Tuning Word is a 12 bit word, made up of DATA 0 - DATA 9 and CODE 0 and CODE 1, which are the most significant bits (MSB). The 12 bit word is connected to an Erasable Programmable-Read-Only-Memory (EPROM) U1, address lines. The EPROM is programmed to provide certain proper data, for each "Tuning Word" on its address lines from the receiver.

The data out of the EPROM (as selected by the data on its address lines), is connected to a Digital-To-Analog Converter (D-A), U3. The D-A converter produces a step voltage output dependent upon data received from the EPROM. The information stored in the EPROM is such that the D-A converter will output the proper voltage for the Voltage Controlled Tuning Diodes (VARICAPS), discussed later in these paragraphs. This permits the Tracking Preselector to accurately track the receiver tuning.

A strobe is used to trigger the EPROM and D-A Converter, after the address has been received by the PROM. The CE pin of the D-A Converter is grounded, so the received signal is latched after the completion of the strobe. This keeps the control voltage output of the converter at the proper level for the receiver "tuning word" connected to the EPROM address lines. For every "tuning word" from the receiver, there is a corresponding voltage requirement by the VARICAPS of the selected band. It is the data required by the D-A converter in order to produce this voltage, which is stored in the PROM.

The step voltage output of the D-A converter is connected to the + input of two OP Amps, U4B and U4A. The OP Amps have outputs which have sufficient swing to furnish the voltage required by the VARICAPS. A +30 volt dc-dc converter is used (off card), to produce the required OP Amp potential.

In providing the required potential swing for the varicaps, two OP Amps are used instead of one. The VARICAPS are divided into two groups; group 1 consists of Band "B" and Band "D", connected to the U4B output called "TV 1", and the other group, made up of Band "A" and Band "C" VARICAPS, which are connected to the U4A output called "TV 2". Using the two OP Amps prevents OP Amp loading and provides some isolation between the two preselector groups.

The CODE 0 and CODE 1 bits of the "tuning word" connected to the PROM address lines, are also connected to U2, which is used as a Decoder and Latch. In addition, the decoder uses a third bit, CODE 2 from the receiver tuning word. These three bits provide the decoder input that allows the selection of the proper preselector band. Note that the Decoder CE (Chip Enable) pin is connected to the same strobe line input as the PROM and D-A converter. Thus the decoder band select and D-A converter are timed together. The strobe trigger pulse is LOW, so at the end of the trigger pulse the decoder chip latches the data on the CBA input from the CODE 0, 1 and 2 bits. This keeps the selected preselector band connected until a different preselector band is chosen by the tuning word as received at the U2 decoder input.

Five decoder outputs are used, one for each preselector band. Also, a separate OP Amp is used for each of the decoder outputs. The OP Amps provide the forward current necessary to connect one of the preselector bands. The non-inverting + input of the amps is

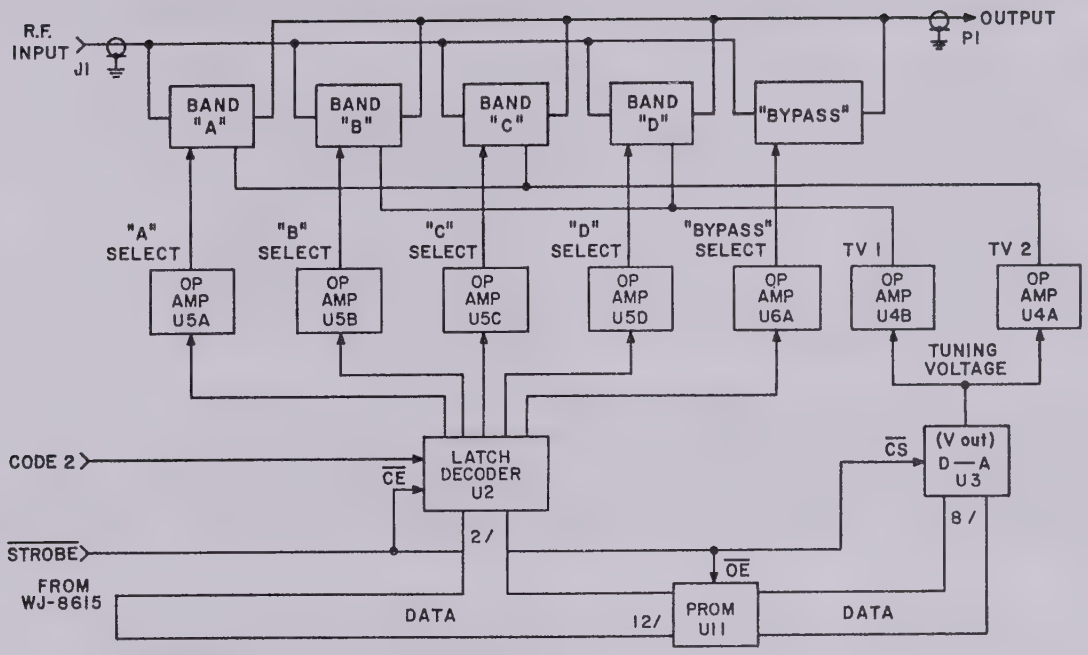


Figure 1-4. Tracking Preselector Block Diagram

used. When the decoder input goes LOW (at the selected output), the OP Amp output goes LOW, selecting the proper preselector band, as described later in these paragraphs. **Table 1-2** illustrates the relationship of the decoder input (CODE 0, 1 and 2), verses the selected preselector band and its bandwidth.

Table 1-2. CODE 0, 1, 2 Versus Band Select and Frequency Coverage

CODE	PRESELECTOR BAND	BANDPASS
000	A	20 - 49 MHz
001	B	49 - 118 MHz
010	C	118 - 264 MHz
011	D	264 - 500 MHz
100	"BYPASS"	2 - 500 MHz

RF input to the tracking preselector board is at J1. The RF is connected through C1, to the junction of five (5) PIN diodes, CR3, CR4, CR6, CR8 and CR9. Each preselector band is connected to the RF input through one of these PIN diodes. Depending on which diode is forward biased, one band will be connected to the incoming RF signal. Due to the very high impedance of the PIN diodes which are NOT forward biased, the other bands are NOT connected to the incoming signal.

Using Band "C" as an example, the input RF is connected to Preselector Band "C" when PIN diode CR9 is forward biased. Connected to CR9 is L3 and R3, which provide a high impedance for the incoming signal, but a low impedance path for the forward biasing current. Band "C" select from the U5C OP Amp, furnishes the voltage required to forward bias the CR9 PIN diode. The forward biasing presents a low impedance path for the RF signal from J1 through CR9, to the Band "C" preselector. All other PIN diode inputs are reversed biased under these conditions, keeping the other preselector band inputs DISCONNECTED from the incoming RF signals.

The preselector output circuits operate in a similar manner. Note that each preselector output is connected a PIN diode, CR32, CR33, CR35, CR38 or CR39 through an inductor and capacitor in series. The other end of each of the PIN diodes go to a junction of the other preselector outputs. This junction connects to the output cable (and P1), through C16. Each PIN diode is also connected (through its own inductor and resistor), to the band select input used for that band's RF input PIN diode.

Using Band "C" as an example, the preselector output is coupled through L11 and C14, to PIN diode CR35. When Preselector Band "C" is selected, the Band "C" select signal is connected to PIN diode CR35 through R15 and L15. This forward biases CR35 and provides a low impedance path to the output of Preselector Band "C", to the output coax cable (through C16). All other preselector output PIN diodes have a high impedance path to the coax, because all PIN diodes (except CR35), are reversed biased when Preselector Band "C" is selected.

Each of the Preselector Bands share similar circuitry. The primary difference is in part values required to tune the different frequencies. Each of the preselectors use ten (10) VARICAPS to tune the preselector circuits, with the voltage from either the Tune Voltage 1

(TV 1), or Tune Voltage 2 (TV 2), which is controlled by the D-A Converter output. In the case of Band "A" Preselector, THREE VARICAPS connected in parallel are used for each of the 10 VARICAP locations shown on the parts layout and the schematic. They are required in order to provide the relatively large capacitance values necessary for the lower frequencies of 20 to 49 MHz, covered by the "A" Band Preselector. In the case of the Band "B" Preselector, two (2) VARICAPS are used in parallel for each of the 10 VARICAP locations, required to resonate the frequencies of the "B" Band (49 to 118 MHz).

The $\overline{\text{"BYPASS"}}$ select signal from the decoder (and associated U6A OP Amp), is used to select the "BYPASS" function provided by the Tracking Preselector. This function is provided primarily so that RF input signals below 20 MHz, (which are too low for the Preselector), can bypass the four Preselector Bands and connect directly to the output coax (through C16), and P1. When the decoder (and associated OP Amp U6A), present $\overline{\text{BYPASS}}$ select, it is connected through R13 to the CR6 PIN diode. This forward biases the diode, allowing the RF signal to pass through it, to PIN diode CR33. Note that the CR33 PIN diode is also connected to $\overline{\text{BYPASS}}$ select through R14, and therefore it too is forward biased. Thus, the incoming signal is connected from J1 through CR6, CR33 and C16, to the output coax and P1. There is NO filtering of any signals which pass through the "Bypass" part of the tracking preselector.

In addition to selecting the "Bypass" function of the preselector for frequencies below 20 MHz, the function may also be used for "A-typical" purposes. The "tuning word" can legitimately select the Bypass function. An example of A-typical use is when a 4 MHz or 2 MHz IF bandwidth is being used. In this case, the Preselector should not be used and the Bypass mode selected.

1.5.3 ALIGNMENT

Alignment of the WJ-8615/TP Tracking Preselector is determined by the programming of the EPROM U1. Should alignment be required, the complete Preselector should be returned to the factory for reprogramming.

1.6 REPLACEMENT PARTS LIST

1.6.1 UNIT NUMBERING METHOD

The unit numbering method of assigning reference designations (electrical symbol numbers) has been used to identify assemblies, subassemblies (and modules) and parts. An example of the unit numbering method follows:

Subassembly Designation A1	R1 Class and No. of Item
Identify from right to left as:	First (1) resistor (R) of first (1) subassembly (A)

As shown on the main chassis schematic, components which are an integral part of the main chassis have no subassembly designation.

1.6.2 REFERENCE DESIGNATION PREFIX

Partial reference designations have been used on the equipment and on the illustrations in this manual. The partial reference designations consist of the class letter(s) and identifying item number. The complete reference designations may be obtained by placing the proper prefix before the partial reference designations. Reference Designation Prefixes are provided on drawings and illustrations in parentheses within the figure titles.

1.6.3 LIST OF MANUFACTURERS

Mfr. Code	Name and Address
00779	AMP Incorporated P.O. Box 3608 Harrisburg, PA 17105
01121	Allen-Bradley Company 1201 South 2nd Street Milwaukee, WI 53204
08108	Lamp Industry for use with Industry designation for lamps
09021	Airco Electronics Bradford, PA 16701
14632	Watkins-Johnson Company 700 Quince Orchard Road Gaithersburg, MD 20878
14663	Micro Metrics Inc. 204 21st Avenue Paterson, NJ 07501
19505	Applied Engineering Prod. Comp. Division of Samarius Inc. 300 Seymour Avenue Derby, CT 06418
23936	Pamotor Div. W.J. Purdy Co. 770 Airport Blvd. Burlington, CA 94010
24355	Analog Devices Inc. P.O. Box 280 Norwood, MA 02062
24546	Corning Glass Works 550 High Street Bradford, PA 16701
27014	National Semi-Conductor Corp. 2950 San Ysidro Way Santa Clara, CA 95051
28480	Hewlett-Packard Company Corporate Headquarters 1501 Page Mill Road Palo Alto, CA 94304
29990	American Technical Ceramics 1 Norden Lane Huntington Station, NY 1146
33095	Spectrum Control Inc. 152 E. Main Street Fairview, PA 16415
34899	Fair-Rite Products Corp. 1 Commercial Row Wallkill, NY 12589
36665	Mitel Corp. 350 Leggett Drive P.O. Box 13089 Kanata Ont. Canada
50101	Frequency Sources Inc. 16 Maple Road South Chelmsford, MA 01824
50821	Integrated Circuit Incorp. 13256 Northrupway Bellevue, WA 98005

Mfr. Code	Name and Address
51642	Centre Engineering Inc. 2820 E. College Avenue State College, PA 16801
52673	KSW Electronics Corp South Bedford Street Burlington, MA 01803
54407	Power-One Inc. 740 Calle Plan Drive Camarillow, CA 93010
55051	Pro-Log 2411 Garden Road Monterey, CA 93940
56289	Sprague Electric Company Marshall Street North Adams, MA 01247
58589	Ziatech Corp. 2410 Broad Street San Luis, Obispo, CA 93401
7W259	Tel-Cal Corp. 9108 Mayflower Avenue El Paso, TX 79925
70903	Belden Corp. 415 South Kilpatrick Chicago, IL 60644
71279	Cambridge Thermionic Corp. 445 Concord Avenue Cambridge, MA 02138
72982	Erie Technological Prod., Inc. 2155 North Forbes Suite 10718 Tuscon, AZ 85705
80031	Electra-Midland Corp. 22 Columbia Road Morristown, NJ 07960
80058	Joint Electronics Type Designation System
81349	Military Specifications
82389	Switchcraft Inc. 5555 North Elston Ave. Chicago, IL 60630
87034	Marco-Oak Ind. 207 South Helena Street Anaheim, CA 92803
91506	Augat, Inc. 3 Perry Ave. Attleboro, MA 02703
92825	Whitso Inc. 9330 Byron Street Schiller Park, IL 60176
93306	Uniform Tubes Inc. 200 W. 7th Avenue Collegeville, PA 19426

1.6.4 REPLACEMENT PARTS LIST

The parts list which follows contains all electrical parts used in the equipment and certain mechanical parts which are subject to unusual wear or damage. When ordering replacement parts from the Watkins-Johnson Company, specify the type and serial number of the equipment and the reference designation and description of each part ordered. The list of manufacturers provided in **paragraph 5.3** and the manufacturer's part number for components are included as a guide to the user of the equipment in the field. These parts may not necessarily agree with the parts installed in the equipment; however, the parts specified in this list will provide satisfactory operation of the equipment. Replacement parts may be obtained

from any manufacturer as long as the physical and electrical parameters of the part selected agree with the original indicated part. In the case of components defined by a military or industrial specification, a vendor which can provide the necessary component is suggested as a convenience to the user.

NOTE

The component U15, listed on the following parts list, is required by the tracking preselector option, but is not mounted on the preselector circuit board. This component is mounted on the Type 796245 Synthesizer Interface (A1A5).

As improved semiconductors become available, it is the policy of Watkins-Johnson to incorporate them in proprietary products. For this reason some transistors, diodes and integrated circuits installed in the equipment may not agree with those specified in the parts lists and schematic diagrams of this manual. However, the semiconductors designated in the manual may be substituted in every case with satisfactory results.

1.6.4.1 **Type 796324-1 Tracking Preselector** REF DESIG PREFIX A1A14

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
C1	Capacitor, Ceramic, Chip: 5100 pF, 20%, 50 V	7	ATC700B512MP50X	29990	
C2	Capacitor, Ceramic, Monolithic: 1000 pF, ±2%, 100 V	15	150-100-NPC-102G	51642	
C3	Capacitor, Ceramic, Chip: 470 pF, 10%, 200 V	4	ATC700B471KP200X	29990	
C4	Same as C3				
C5	Same as C2				
C6	Same as C2				
C7	Capacitor, Ceramic, Chip: 1.5 pF, ±0.1 pF, 500 V	2	ATC700B1R5BP500X	29990	
C8	Capacitor, Ceramic, Chip: 1.3 pF, ±0.1 pF, 500 V	1	ATC700B1R3BP500X	29990	
C9	Same as C2				
C10	Same as C2				
C11	Same as C3				
C12	Same as C1				
C13	Capacitor, Ceramic, Disc: 4700 pF, 20%, 50 V	5	8121-050-651-472M	72982	
C14	Same as C3				
C15	Same as C2				
C16	Same as C1				
C17	Same as C13				
C18	Same as C1				
C19	Same as C1				
C20	Same as C13				
C21	Same as C2				
C22	Description Problem				
C23	Capacitor, Ceramic, Chip: 1.0 pF, ±0.1 pF, 500 V	1	ATC100B1R0BP500X	29990	
C24	Same as C2				
C25	Same as C13				
C26	Same as C1				
C27	Same as C1				
C28	Same as C13				
C29	Capacitor, Ceramic, Disc: 0.1 µF, 20%, 50 V	9	34475-1	14632	
C30	Capacitor, Ceramic, Disc: .01 µF, 20%, 50 V	2	34453-1	14632	
C31	Capacitor, Electrolytic, Tantalum: 22 µF, 20%, 10 V	1	196D226X0010JE3	56289	
C32 Thru C35	Same as C29				
C36	Not Used				
C37	Same as C29				
C38	Capacitor, Electrolytic, Tantalum: 4.7 µF, 20%, 35 V	1	196D475X0035JE3	56289	
C39	Same as C30				
C40	Capacitor, Ceramic, Monolithic: 300 pF, ±2%, 100 V	2	150-100-NPC-301G	51642	
C41	Same as C40				
C42	Same as C29				

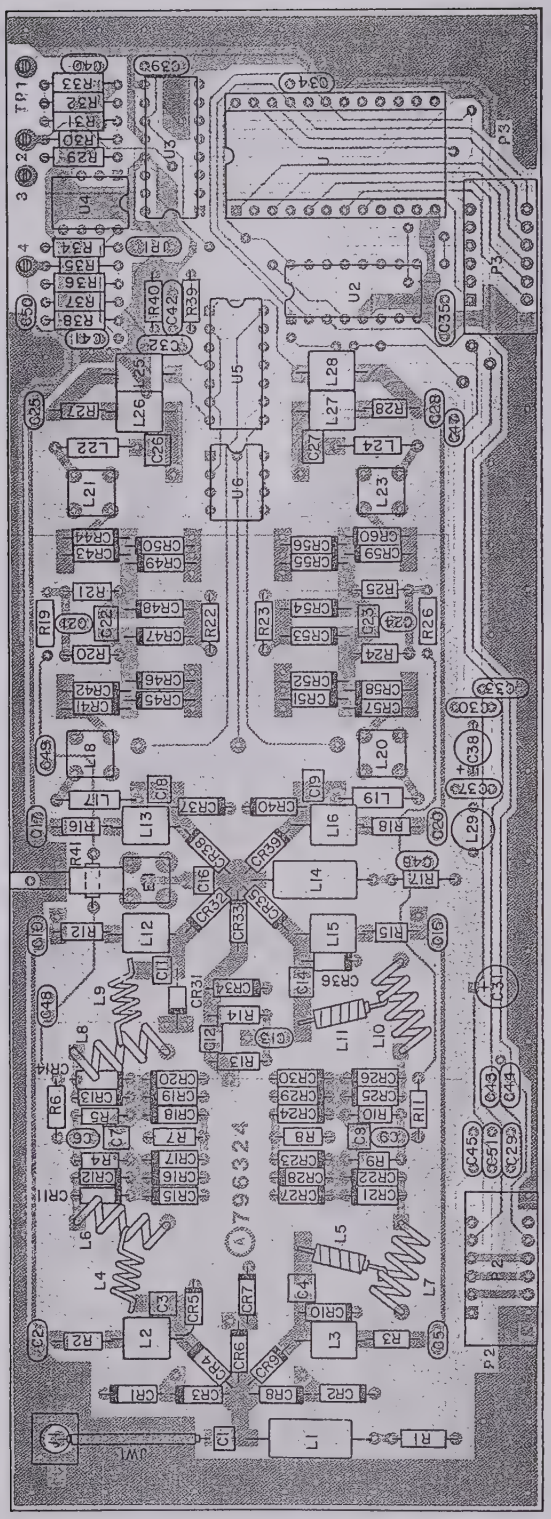


Figure 1-5. Type 796324-1 Tracking Preselector Location of Components

REF DESIG PREFIX A1A14

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
C43	Same as C2				
C44	Same as C2				
C45	Same as C29				
C46 Thru C50	Same as C2				
C51	Same as C29				
CR1	Diode	10	5082-3039	28480	
CR2	Same as CR1				
CR3	Diode	10	GC4371-15	50101	
CR4	Same as CR3				
CR5	Same as CR1				
CR6	Same as CR3				
CR7	Same as CR1				
CR8	Same as CR3				
CR9	Same as CR3				
CR10	Same as CR1				
CR11	Diode	6	U11-3102	52673	
CR12	Diode	4	180353-1	14632	
CR13	Same as CR12				
CR14	Same as CR11				
CR15	Same as CR11				
CR16	Same as CR12				
CR17	Same as CR11				
CR18	Same as CR11				
CR19	Same as CR12				
CR20	Same as CR11				
CR21	Diode	60	KV3901	52673	
CR22 Thru CR30	Same as CR21				
CR31	Same as CR1				
CR32	Same as CR3				
CR33	Same as CR3				
CR34	Same as CR1				
CR35	Same as CR3				
CR36	Same as CR1				
CR37	Same as CR1				
CR38	Same as CR3				
CR39	Same as CR3				
CR40	Same as CR1				
CR41	Diode Assembly	10	280711-1	14632	

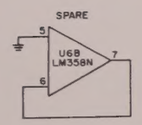
REF DESIG PREFIX **A1A14**

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
CR42 Thru CR50	Same as CR41				
CR51	Diode Assembly	10	280711-2	14632	
CR52 Thru CR60	Same as CR51				
CR51	Diode Assembly	10	280711-2	14632	
CR52 Thru CR60	Same as CR51				
J1	Connector, Receptacle	1	2009-7511-000	19505	
JP1	Jumper Plug	1	461-2872-01-03-10	71279	
L1	Coil, Fixed	2	170134-1	14632	
L2	Coil, Fixed	10	190187-1	14632	
L3	Same as L2				
L4	Coil	1	180343-2	14632	
L5	Coil, Fixed: .040 µH, ±1%	2	L8004	7W259	
L6	Coil	1	180342-2	14632	
L7	Coil	1	180341-1	14632	
L8	Coil	1	180342-1	14632	
L9	Coil	1	180343-1	14632	
L10	Coil	1	180341-2	14632	
L11	Same as L5				
L12	Same as L2				
L13	Same as L2				
L14	Same as L1				
L15	Same as L2				
L16	Same as L2				
L17	Coil, Fixed: .121 µH, ±1%	2	L10-0R12	7W259	
L18	Coil Assembly	2	280520-1	14632	
L19	Coil, Fixed: .261 µH, ±1%	2	L10-0R261	7W259	
L20	Coil Assembly	2	280693-1	14632	
L21	Same as L18				
L22	Same as L17				
L23	Same as L20				
L24	Same as L19				
L25 Thru L28	Same as L2				
L29	Coil, Fixed: 1.0 mH, 10%	1	553-3635-37	71279	
P2	Receptacle Assembly	2	102585-6	00779	
P3	Same as P2				

REF DESIG PREFIX A1A14

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
R1	Resistor, Fixed, Film: 1.5 kΩ, 5%, 1/8 W	3	CF1/8-1.5K/J	09021	
R2	Resistor, Fixed, Film: 470Ω, 5%, 1/8 W	10	CF1/8-470 OHMS/J	09021	
R3	Same as R2				
R4	Resistor, Fixed, Film: 27 kΩ, 5%, 1/8 W	12	C3-27K-5PCT	24546	
R5	Same as R4				
R6	Resistor, Fixed, Film: 1.0 kΩ, 5%, 1/8 W	7	CF1/8-1.0K/J	09021	
R7 Thru R10	Same as R4				
R11	Same as R6				
R12 Thru R16	Same as R2				
R17	Same as R1				
R18	Same as R2				
R19	Same as R6				
R20 Thru R25	Same as R4				
R26	Same as R6				
R27	Same as R2				
R28	Same as R2				
R29	Resistor, Fixed, Film: 10 kΩ, 1%, 1/10 W	2	RN55C1002F		
R30	Same as R6				
R31	Resistor, Fixed, Film: 16.2 kΩ, 1%, 1/10 W	2	RN55C1622F		
R32	Resistor, Fixed, Film: 121 kΩ, 1%, 1/4 W	2	MF4C/121K/F		
R33	Resistor, Fixed, Film: 1.82 kΩ, 1%, 1/10 W	2	RN55C1821F		
R34	Same as R29				
R35	Same as R6				
R36	Same as R31				
R37	Same as R32				
R38	Same as R33				
R39	Same as R1				
R40	Same as R6				
R41	Resistor, Fixed, Film: 100Ω, 5%, 1/8 W	1	CF1/8-100 OHMS/J	09021	
U1	Integrated Circuit (EPROM)	1	TBA	14632	
U2	Integrated Circuit	1	MD74SC137AC	36665	
U3	Integrated Circuit	1	AD558KN	24355	
U4	Integrated Circuit	2	LM358N	27014	
U5	Integrated Circuit	1	LM324N	27014	
U6	Same as U4				
U15	DC-DC Conv.	1	DIP 515 DT	50821	

NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   a) CAPACITANCE IS IN pF.
   b) INDUCTANCE IS IN µH.
   c) RESISTANCE IS IN OHMS, ±5%, 1/8W.
2. 180353-1 SAME AS MA-46533C SELECTED FOR 30V REVERSE BREAKDOWN.
3. 280711-1 VARICAP ASSEMBLY CONSISTING OF TWO KV-3901'S IN PARALLEL.
4. 280711-2 VARICAP ASSEMBLY CONSISTING OF THREE KV-3901'S IN PARALLEL.



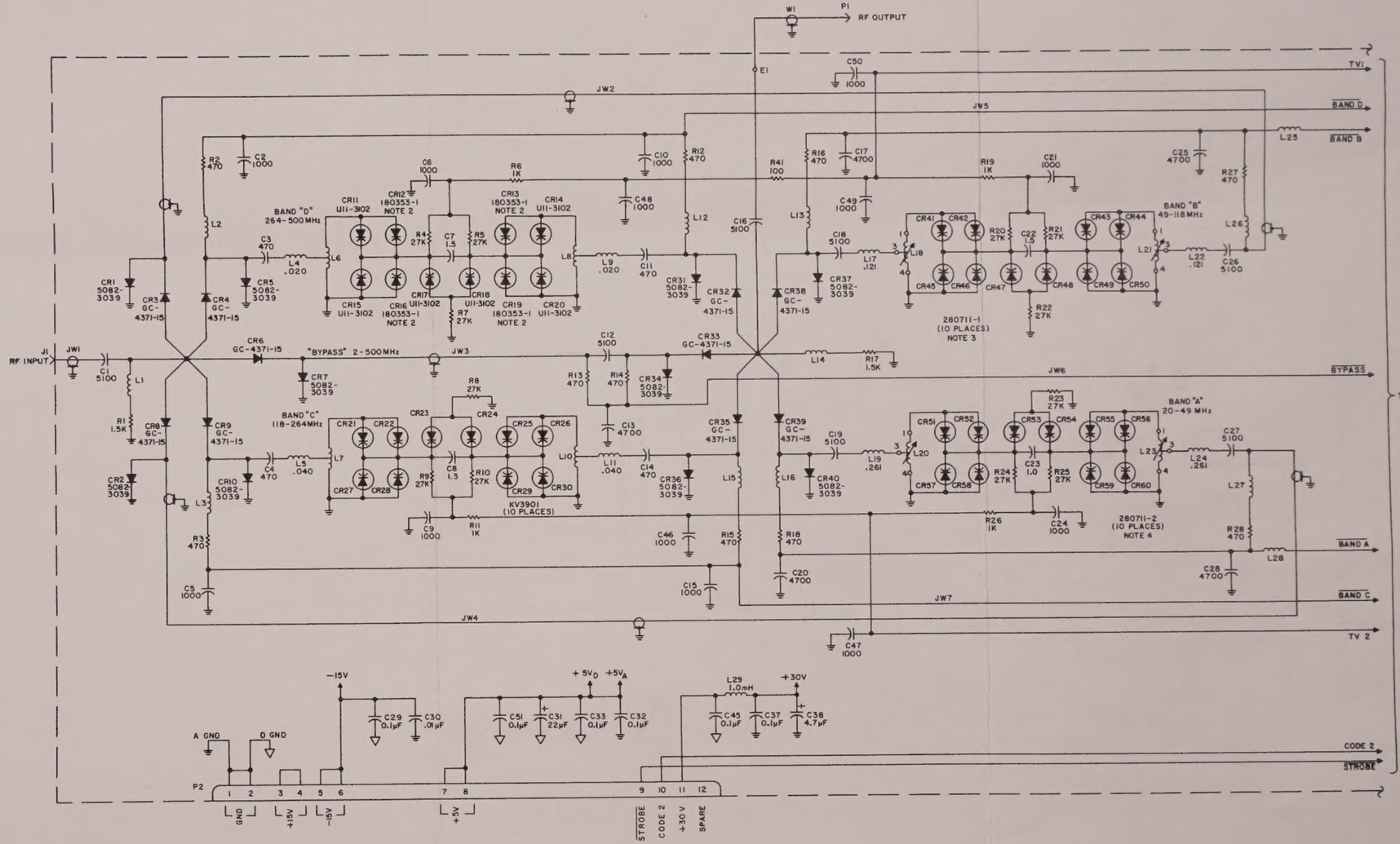


Figure 1-6. Type 796324-1 Tracking Preselector/Control (A1A14) Schematic Diagram 580296 (Sheet 1 of 2)

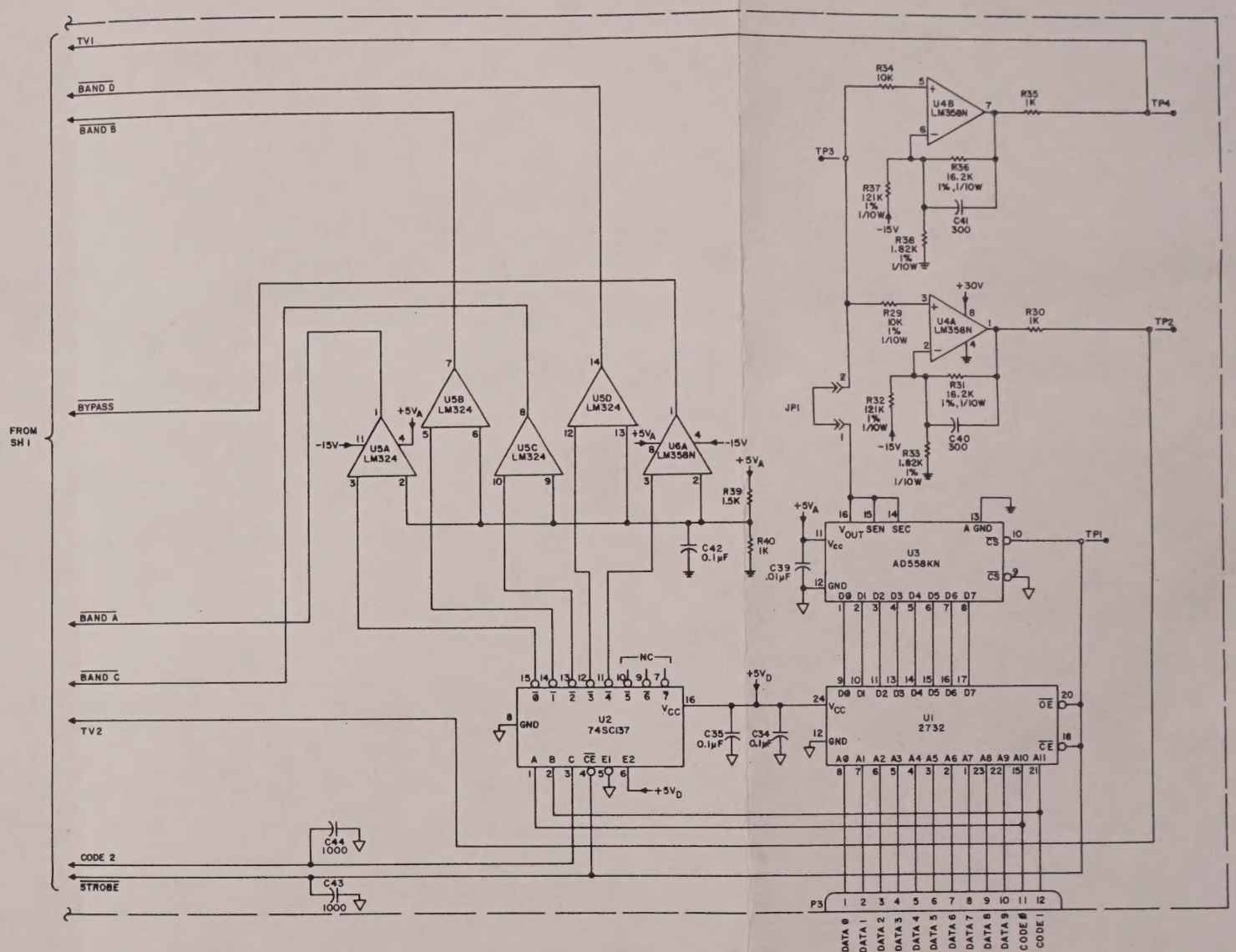


Figure 1-6. Type 796324-1 Tracking Preselector/Control (A1A14) Schematic Diagram 580296 (Sheet 2 of 2)

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